# Posttraumatic Stress Disorder of the Tsunami Survivors in Thailand

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***Background:*** *The natural disaster known as "the Tsunami" occurred in the Andaman sea coast of Thailand in December 2004, and there had been questions whether it could cause PTSD amongst the population who lives in the affected area and how to avoid PTSD condition to occur.*

***Objective:*** *Establish statistical results of psychosocial factors, and their correlation to PTSD and other mental disorders to generate the PTSD database.*

***Material and Method:*** *A cross-sectional community surveys from 3,133 samples had been conducted in two phases from the same sampling group. The first phase was concerned with prevalence of PTSD, depression, and related factors. The second phase included 2,573 samples from the first phase and focused on chronic PTSD and other mental disorders.*

***Results:*** *The 3,133 samples used in the first phase show that 33.6% suffered from PTSD, 14.27% with depression, and 11.27% suffered from both. The 2,573 samples from the first phase were followed, collected the blood, and interview data only 21.6% were diagnosed with chronic PTSD.*

***Conclusion:*** *The statistical analysis has identified risks factors that could cause PTSD, and protective actions that could help to prevent PTSD. The prevalence of PTSD was still higher in the affected region six months after the Tsunami.*

***Keywords:*** *Posttraumatic stress disorder, Tsunami, Thailand*

At 7.58 am, on December 26, 2004 an earthquake magnitude of 9.0 Righter scales took place toward the North of Sumatra Island, Indonesia. It generated gigantic waves called Tsunami along the coast of Andaman Sea and Indian Ocean and claimed more than 300,000 lives from 11 affected countries including Thailand. The 2004 Tsunami disaster in the six provinces of the southern part of Thailand not only claimed thousands of lives and brought extensive destruction to the affected areas, but also left the survivors with mental disorders especially Posttraumatic Stress Disorder (PTSD) and other mental health problems.

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PTSD is a psychiatric disorder that results from the experience or witnessing of traumatic or life-threatening events. During the Civil War, a PTSD-like disorder had been referred to as the 'Da Costa's Syndrome'[1]. PTSD has profound psychobiological correlates, which can impair the person's daily life and be life threatening[2,3]. The diagnosis of PTSD describes symptoms that develop in response to exposure to "extreme traumatic stressors involving direct personal experience of an event or witnessing an event"[4]. These events include natural disasters. Symptoms range from re-experiencing the trauma, persistent avoidance of reminders of the event, numbing of responsiveness, and persistent anxiety or hyper-arousal. For a diagnosis of PTSD, these

symptoms must be present for more than one month, and must cause clinically significant distress or impairment in functioning[5].

The prevalence of PTSD from disaster are varies ranging from 11-31.8%. Kar Bastia, who studied the prevalence of PTSD in adolescents after a natural disaster, found that post-disaster PTSD presentation in adolescents was 26.9%[6]. Fullerton et al examined PTSD in exposed disaster workers (the events of Sept. 11, 2001) found 20.4% of subjects[7]. Mills et al explored the prevalence of mental disorders among tortured Tibetan refugees, and found that the prevalence of PTSD ranged from 11-23% of subjects[8]. Ozen & Ser determined that the frequency of PTSD in a group of search-and-rescue workers, two months after the May 2003 Bingol earthquake, was 25%[9]. Guo et al investigated the prevalence of PTSD among professional and non-professional rescue workers involved in the 1999 Chi-Chi Earthquake in Taiwan and found that the prevalence of PTSD of professional and non-professional rescuers were 19.8% and 31.8%[10].

Not everyone who experiences the Tsunami develops PTSD. The purposes of the present study in the first phase were to determine PTSD and other mental disorders among people aged over 18 years old in six provinces affected by the Tsunami in Thailand by conducting the community survey from directed affected and controlled area in the same province. To determine the risk and resiliency factors for PTSD by comparing a group of volunteers who developed PTSD from Tsunami with a group of individuals exposed to Tsunami who did not develop the disorder.

The second phase study was to identify subjects diagnosed with chronic PTSD and subjects without chronic PTSD by re-interviewing the same subjects from the first phase with a set of standard structured interviews. The authors also looked for and interviewed subjects without chronic PTSD, a sib-subjects without chronic PTSD, 18 years or older, and both parents of the first phase subjects diagnosed with PTSD were included in the study. The blood was drawn from every subject in this phase for genetic study.

## Material and Method
### Participants
The first phase of the study was collected by cross-sectional community survey data from 3,133 subjects aged over 18 years old in a direct affected and controlled area of the six provinces of Thailand, namely, Ranong, Pang-nga, Phuket, Krabi, Trang, and Satoon.

The second phase of the present study collected 2,573 subjects from the first phase. The subjects were followed and collected the data by well trained interviewers including subjects diagnosed with PTSD, subjects without PTSD, and the siblings of the subjects diagnosed with PTSD after being informed and signed the inform consent form including psychiatric treatment follow-up.

### Instruments
#### The first phase
- Demographic data and exposure to Tsunami information
- Davidson Trauma Scale, (confirmed by psychiatric interview using CAPSII)
It is 17-item, brief global assessment scale for posttraumatic stress disorder (PTSD).
The DTS showed good internal consistency (Cronbach alpha = 0.97) and test-retest reliability (r = 0.88-.93)[11-13].
- Beck Depression Inventory: BDI
BDI was developed by Beck et al (1979). BDI is a self-report scale with 21 items that measure the emotional, somatic, cognitive, and motivational symptoms seen in depression. The aim of the scale is to determine the severity of depressive symptoms. Correlation coefficients by split half reliability were 0.74, BDI scores ≥ 20 were reported to discriminate depression that might require treatment with more than 90% accuracy. The score of each item ranges from 0 to 3[14].
- Symptom Check List 90:SCL 90
SCL 90 is a self-rated scale that consists of nine psychiatric symptom domains.
It consists of 90 items in nine subscales: somatization, obsessive-compulsive, interpersonal sensitivity, depression, anxiety, hostility, phobic-anxiety, paranoid ideation, and psychoticism[15].
- Maudsley Personality Inventory: MPI
MPI is a self-rated scale that consists of 48 items indicating scores on the dimensions of extra-version and neuroticism. The correlation between corresponding scales are high, r = 0.86 for neuroticism and r = 0.87 for extraversion[16].
- Brief Cope Scale
Brief Cope Scale is a multidimensional coping inventory to assess the different ways in which people respond to stress. Brief Cope Scale consists of 28 items in 14 dimension as follows: Self-distraction, Active coping, Denial, Substance use, Use of emotional support, Use of instrumental support, Behavioral

disengagement, Venting, Positive reframing, Planning, Humor, Acceptance, Religion, and Self-blame[17,18].

### The second phase

- Semi-Structured Assessment for Drug Dependence and Alcoholism: SSADDA

SSADDA is a diagnostic instrument developed for studies of the genetics of substance use and associated disorders[19].

- Composite International Diagnostic Interview: CIDI

CIDI is a comprehensive and fully standardized diagnostic interview designed for assessing mental disorders according to the definitions of the Diagnostic Criteria for Research of ICD-10 and DSM-III-R[20,21].

### Procedure

The first phase, Sample frame was multi-stage randomly selected, between February-March, 2005 (within 3 months after Tsunami). An Informed consent was obtained from all the participants. The samples were interviewed by well trained last-year nurse students, and confirmed by psychiatric interview with CAPS II and also gave the psychiatric treatment by psychiatrists which took approximately 55 minutes to complete the questionaire.

The second phase, subjects from the first phase were followed and collected the data by well trained interviewers including subjects diagnosed with PTSD, subjects without PTSD, and the sib of the subject diagnosed with PTSD after being informed and signed the inform consent form including psychiatric treatment and follow-up. The second phase was implemented during May-August, 2005 (6 months post-Tsunami).

Descriptive Statistics were used to record the prevalence of PTSD, chronic PTSD and other mental disorders. Odd ratio was conducted to determine the relationship between PTSD and other variables. These variables were then included as predictor variables in a Binary logistic regression analysis. All analyses were conducted using SPSS for windows[22].

### Results
#### The first phase

The 1,054 (33.60%) was diagnosed as PTSD, 447 (14.27%) was diagnosed as having depression and 353 (11.27%) had both PTSD and depression as a co-morbidity. The prevalence of PTSD, depression and co-morbidity classified by province are shown in Table 1.

The comparison of characteristic variables between people diagnosed with PTSD and without PTSD which revealed that there was a difference between them in their gender (OR = 1.24, 95% CI: 1.07-1.45), affected area (OR = 3.47, 95% CI: 2.93-4.1), physical condition (OR = 1.51, 95% CI: 1.27-1.78), having history of previous trauma before the age of twelve (OR = 1.56, 95% CI: 1.34-1.81), having history of previous trauma during 12-18 years (OR = 1.49, 95% CI: 1.28-1.74), known tsunami before (OR = 1.19, 95% CI: 1.02-1.40), physical injury (OR = 2.85, 95% CI: 2.38-3.42), loss of family member(s) (OR = 1.48, 95% CI: 1.28-1.72), loss of property (OR = 0.31, 95% CI: 0.26-0.37), loss of career (OR = 0.55, 95% CI: 0.47-0.64), (Table 2).

The results from the Beck Depression Inventory-BDI and SCL90 revealed significant differences between those with and without PTSD; the depression from BDI (OR = 10.63, 95% CI: 8.34-13.56), and other symptoms from SCL 90; Somatization (OR = 6.95, 95% CI: 5.25-9.21), Obsessive-Compulsive (OR = 7.8, 95% CI: 5.29-11.50), Interpersonal Sensitivity (OR = 5.51, 95% CI: 3.24-9.39), Depression (OR = 12.64, 95% CI: 8.69-18.38), Anxiety (OR = 10.59, 95% CI: 6.16-18.21), Hostility (OR = 6.65, 95% CI: 3.37-13.11), Phobic Anxiety (OR = 7.76, 95% CI: 6.05-9.96), Paranoid

**Table 1.** The prevalence of PTSD, depression and co-morbidity

| Province | PTSD n (%) | Depression n (%) | Co-morbidity n (%) | Normal n (%) |
|---|---|---|---|---|
| Pang-nga | 545 (51.7) | 238 (53.2) | 194 (55.0) | 1,058 (53.3) |
| Ranong | 64 (6.1) | 27 (6.0) | 23 (6.5) | 91 (4.6) |
| Phuket | 71 (6.7) | 24 (5.4) | 16 (4.5) | 161 (8.1) |
| Krabi | 119 (11.3) | 42 (9.4) | 31 (8.8) | 203 (10.2) |
| Trang | 170 (16.1) | 72 (16.1) | 55 (15.6) | 324 (16.3) |
| Satoon | 85 (8.1) | 44 (9.8) | 34 (9.6) | 148 (7.5) |
| Total | 1,054 (100) | 447 (100) | 353 (100) | 1,985 (100) |

**Table 2.** The prevalence characteristics of the study sample (n = 3,133)

| Characteristics | PTSD (n = 1,054) n (%) | Without PTSD (n = 2,079) n (%) | OR | 95% CI Lower | Upper |
|---|---|---|---|---|---|
| Gender | | | | | |
| Male | 414 (39.3) | 927 (44.6) | 1.24* | 1.07 | 1.45 |
| Female | 640 (60.7) | 1,152 (55.4) | | | |
| Affected area | | | | | |
| Direct affected area | 823 (78.1) | 1,053 (50.6) | 3.47* | 2.93 | 4.11 |
| Non direct affected area | 231 (21.9) | 1,026 (49.4) | | | |
| Physical condition | | | | | |
| Illness | 308 (29.2) | 447 (21.5) | 1.51* | 1.27 | 1.78 |
| Healthy | 746 (70.8) | 1,632 (78.5) | | | |
| History of previous trauma, < 12 yrs | | | | | |
| Trauma | 482 (45.7) | 730 (35.1) | 1.56* | 1.34 | 1.81 |
| No trauma | 572 (54.3) | 1,349 (64.9) | | | |
| History of previous trauma, 12-18 yrs | | | | | |
| Trauma | 419 (39.8) | 638 (30.7) | 1.49* | 1.28 | 1.74 |
| No trauma | 635 (60.2) | 1,441 (69.3) | | | |
| Known Tsunami before | | | | | |
| Known | 358 (34.0) | 626 (30.1) | 1.19** | 1.02 | 1.40 |
| Unknown | 696 (66.0) | 1,453 (69.9) | | | |
| Physical injury | | | | | |
| Physical injury | 327 (31.0) | 283 (13.6) | 2.85* | 2.38 | 3.42 |
| No physical injury | 727 (69.0) | 1,796 (86.4) | | | |
| Loss of family member | | | | | |
| Yes | 588 (55.8) | 956 (46.0) | 1.48* | 1.28 | 1.72 |
| No | 466 (44.2) | 1,123 (54.0) | | | |
| Loss of property | | | | | |
| Yes | 240 (22.8) | 1,012 (48.7) | 0.31* | 0.26 | 0.37 |
| No | 814 (77.2) | 1,067 (51.3) | | | |
| Loss of career | | | | | |
| Yes | 493 (46.8) | 678 (32.6) | 0.55* | 0.47 | 0.64 |
| No | 561 (53.2) | 1,401 (67.4) | | | |

* p < 0.01, ** p < 0.05

Ideation (OR = 7.78, 95% CI: 4.46-13.58), Psychoticism (OR = 8.90, 95% CI: 5.29-14.96) (Table 3).

The results from the brief cope scale revealed significant differences used by those with and without PTSD; active coping (OR = 2.10, 95% CI: 1.80-2.44), planning (OR = 2.39, 95% CI: 2.05-2.79), positive reframing (OR = 1.60, 95% CI: 1.38-1.86), acceptance (OR = 1.37, 95% CI: 1.17-1.60), humor (OR = 1.34, 95% CI: 1.15-1.56), religion (OR = 1.56, 95% CI: 1.34-1.81), using emotion support (OR = 2.24, 95% CI: 1.92-2.60), using instrumental support (OR = 1.95, 95% CI: 1.68-2.28), self-distraction (OR = 2.40, 95% CI: 2.60-2.79), denial (OR = 3.30, 95% CI: 2.69-4.06), venting (OR = 2.66, 95% CI: 2.27-3.11), substance use (OR = 1.80, 95% CI:

1.34-2.40), behavioral disengagement (OR = 3.75, 95% CI: 2.81-5.00), and self-blame (OR = 3.25, 95% CI: 2.32-4.57) (Table 3).

The factors suggested by the bivariate analyses that were associated with PTSD were entered into a binary logistic regression analysis model. The model identified thirteen independent variables that correctly predicted 76.6% of individuals who developed to PTSD.

Binary Logistic Regression Model for PTSD. The logistic equation is: -3.41 + 0.95 (Direct Affected Area) + 0.21 (History of Previous Trauma < 12 years) + 0.50 (Physical Injury) + 0.12 (Planning) - 0.13 (Humor) + 0.93 (Use of Emotion Support) + 0.94 (Self Distraction)

**Table 3.** The psychological test score: BDI, SCL90, brief cope scale and MPI by PTSD and without PTSD (n = 3,133)

| Characteristics | PTSD (n = 1,054) n (%) | Without PTSD (n = 2,079) n (%) | Statistics | | |
| --- | --- | --- | --- | --- | --- |
| | | | OR | 95% CI | |
| | | | | Lower | Upper |
| **Beck depression inventory** | | | | | |
| Depression | 353 (33.5) | 94 (4.5) | 10.63* | 8.34 | 13.56 |
| No Depression | 701 (66.5) | 1,985 (95.5) | | | |
| M = 9.32, SD = 8.86 | | | | | |
| **Symptom distress checklist (SCL90)** | | | | | |
| Somatization | 208 (19.7) | 71 (3.4) | 6.95* | 5.25 | 9.21 |
| Usual | 846 (80.3) | 2,008 (96.6) | | | |
| M = 0.53, SD = 0.52 | | | | | |
| Obsessive-Compulsive | 121 (11.5) | 34 (1.6) | 7.80* | 5.29 | 11.50 |
| Usual | 933 (88.5) | 2,045 (98.4) | | | |
| M = 0.66, SD = 0.61 | | | | | |
| Interpersonal Sensitivity | 51 (4.8) | 19 (0.9) | 5.51* | 3.24 | 9.39 |
| Usual | 1,003 (95.2) | 2,060 (99.1) | | | |
| M = 0.48, SD = 0.51 | | | | | |
| Depression | 183 (17.4) | 34 (1.6) | 12.64* | 8.69 | 18.38 |
| Usual | 871 (82.6) | 2,045 (98.4) | | | |
| M = 0.52, SD = 0.54 | | | | | |
| Anxiety | 80 (7.6) | 16 (0.8) | 10.59* | 6.16 | 18.21 |
| Usual | 974 (92.4) | 2,063 (99.2) | | | |
| M = 0.55, SD = 0.57 | | | | | |
| Hostility | 36 (3.4) | 11 (0.5) | 6.65* | 3.37 | 13.11 |
| Usual | 1,018 (96.6) | 2,068 (99.5) | | | |
| M = 0.68, SD = 0.37 | | | | | |
| Phobic anxiety | 281 (26.7) | 93 (4.5) | 7.76* | 6.05 | 9.96 |
| Usual | 773 (73.3) | 1,986 (95.5) | | | |
| M = 0.51, SD = 0.57 | | | | | |
| Paranoid ideation | 60 (5.7) | 16 (.8) | 7.78* | 4.46 | 13.58 |
| Usual | 994 (94.3) | 2,063 (99.2) | | | |
| M = 0.35, SD = 0.49 | | | | | |
| Psychoticism | 76 (7.2) | 18 (0.9) | 8.90* | 5.29 | 14.96 |
| Usual | 978 (92.8) | 2,061 (99.1) | | | |
| M = 0.27, SD = 0.38 | | | | | |
| **Brief cope scale** | | | | | |
| Active coping | 581 (55.12) | 768 (36.94) | 2.10* | 1.80 | 2.44 |
| Usual | 473 (44.88) | 1,311 (63.06) | | | |
| M = 2.33, SD = 1.41 | | | | | |
| Planning | 501 (47.53) | 572 (27.51) | 2.39* | 2.05 | 2.79 |
| Usual | 553 (52.47) | 1,507 (72.49) | | | |
| M = 2.03, SD = 1.45 | | | | | |
| Positive Reframing | 522 (49.53) | 789 (37.95) | 1.60* | 1.38 | 1.86 |
| Usual | 532 (50.47) | 1,290 (62.05) | | | |
| M = 2.29, SD = 1.47 | | | | | |
| Acceptance | 712 (67.55) | 1,254 (60.32) | 1.37* | 1.17 | 1.60 |
| Usual | 342 (32.45) | 825 (39.68) | | | |
| M = 3.00, SD = 1.53 | | | | | |
| Humor | 422 (40.04) | 691 (33.24) | 1.34* | 1.15 | 1.56 |
| Usual | 632 (59.96) | 1,388 (66.76) | | | |
| M = 2.05, SD = 1.48 | | | | | |

* p < 0.01

**Table 3.** (Cont.)

| Characteristics | PTSD (n = 1,054) n (%) | Without PTSD (n = 2,079) n (%) | Statistics | | |
|---|---|---|---|---|---|
| | | | OR | 95% CI | |
| | | | | Lower | Upper |
| Brief cope scale | | | | | |
| Religion | 612 (58.06) | 979 (47.09) | 1.56* | 1.34 | 1.81 |
| Usual | 442 (41.94) | 1,100 (52.91) | | | |
| M = 2.73, SD = 1.72 | | | | | |
| Use of emotion support | 629 (59.68) | 828 (39.83) | 2.24* | 1.92 | 2.60 |
| Usual | 425 (40.32) | 1,251 (60.17) | | | |
| M = 2.54, SD = 1.47 | | | | | |
| Use of instrumental support | 477 (45.26) | 618 (29.73) | 1.95* | 1.68 | 2.28 |
| Usual | 577 (54.74) | 1,461 (70.27) | | | |
| M = 2.15, SD = 1.40 | | | | | |
| Self distraction | 631 (59.87) | 797 (38.34) | 2.40* | 2.06 | 2.79 |
| Usual | 423 (40.13) | 1,282 (61.66) | | | |
| M = 2.40, SD = 1.54 | | | | | |
| Denial | 257 (24.38) | 185 (8.90) | 3.30* | 2.69 | 4.06 |
| Usual | 797 (75.62) | 1,894 (91.10) | | | |
| M = 1.07, SD = 1.28 | | | | | |
| Venting | 482 (45.73) | 500 (24.05) | 2.66* | 2.27 | 3.11 |
| Usual | 572 (54.27) | 1,579 (75.95) | | | |
| M = 2.00, SD = 1.36 | | | | | |
| Substance use | 92 (8.73) | 105 (5.05) | 1.80* | 1.34 | 2.40 |
| Usual | 962 (91.27) | 1,974 (94.95) | | | |
| M = 0.60, SD = 1.12 | | | | | |
| Behavioral disengagement | 136 (12.90) | 79 (3.79) | 3.75* | 2.81 | 5.00 |
| Usual | 918 (87.1) | 2,000 (96.20) | | | |
| M = 0.70, SD = 1.07 | | | | | |
| Self blame | 90 (8.54) | 58 (2.79) | 3.25* | 2.32 | 4.57 |
| Usual | 964 (91.46) | 2,021 (97.21) | | | |
| M = 0.55, SD = 0.96 | | | | | |
| Maudsley personality inventory | | | | | |
| E scale (M = 25.72, SD = 6.01) | | | | | |
| Introvert | 634 (60.2) | 1,064 (51.2) | 1.44* | 1.24 | 1.67 |
| Extrovert | 420 (39.8) | 1,015 (48.8) | | | |
| N Scale (M = 20.41, SD = 11.51) | | | | | |
| Neurotic | 767 (72.8) | 729 (35.1) | 4.95* | 4.21 | 5.82 |
| Stability | 287 (27.2) | 1,350 (64.9) | | | |

* p < 0.01

+ 0.19 (Denial) + 0.10 (Venting) - 0.08 (Substance Use) + 0.15 (Behavioral Disengagement) + 0.07 (Personality: N scale) - 0.02 (Personality: E scale).

A weighted combination of the thirteen independent variables correctly predicted 76.6% of individuals who developed to PTSD (Table 4).

Table 5 presents, prevalence of chronic PTSD (from SADDA) and other mental disorders from CIDI, the 556 (21.60%) as chronic PTSD, and 100 (3.9%) having a life time prevalence PTSD, 472 (18.3%) as having Major Depression, 165 (6.4%) as Manic, 214 (8.3%) as Panic, 103 (4.0%) as Simple Phobia, 162 (6.3%) as Agoraphobia, 65 (2.5%) as Generalized Anxiety, 284 (11.0%) as Obsessive-Compulsive, and 26 (1.0%) as Social Phobia.

For the substance use disorder: Alcohol Abuse and Dependence were 515 (20%) and 139 (5.4%), Nicotine Abuse and Dependence were 363 (14%) and 44 (1.7%), Cannabis Abuse and Dependence were 44 (1.7%) and 16 (.6%), Amphetamine Abuse and

**Table 4.** Binary logistic regression model of factors associated with PTSD

| Characteristics | B | SE | p | OR (95% CI) |
|---|---|---|---|---|
| Constant | -3.412 | 0.253 | - | - |
| Direct affected area | 0.952 | 0.102 | 0.000 | 2.59 (2.12-3.16) |
| Having history of previous trauma (< 12 years) | 0.214 | 0.091 | 0.018 | 1.24 (1.04-1.48) |
| Physical injury | 0.504 | 0.110 | 0.000 | 1.66 (1.33-2.05) |
| Planning coping | 0.124 | 0.035 | 0.000 | 1.13 (1.06-1.21) |
| Humor coping | -0.134 | 0.035 | 0.000 | 0.87 (0.82-0.94) |
| Use of emotion support coping | 0.093 | 0.038 | 0.014 | 1.09 (1.02-1.18) |
| Self distraction coping | 0.094 | 0.037 | 0.011 | 1.10 (1.02-1.18) |
| Denial coping | 0.194 | 0.037 | 0.000 | 1.21 (1.13-1.31) |
| Venting coping | 0.100 | 0.040 | 0.013 | 1.11 (1.02-1.19) |
| Substance use coping | -0.083 | 0.040 | 0.039 | 0.92 (0.85-0.99) |
| Behavioral disengagement coping | 0.145 | 0.044 | 0.001 | 1.56 (1.06-1.26) |
| Personality: N scale | 0.068 | 0.004 | 0.000 | 1.07 (1.06-1.08) |
| Personality: E scale | -0.021 | 0.008 | 0.007 | 0.98 (0.96-0.99) |

**Table 5.** Prevalence of chronic PTSD and other mental disorders from CIDI

| Characteristics (n = 2,573) | Case, n (%) | Non-case, n (%) |
|---|---|---|
| Chronic PTSD | 556 (21.6) | 2,017 (78.4) |
| Have a life time prevalence PTSD | 100 (3.9) | 2,473 (96.1) |
| Patient with mental disorders from CIDI | | |
|   Mood disorders | | |
|     Major depression | 472 (18.3) | 2,101 (81.7) |
|     Manic | 165 (6.4) | 2,408 (93.6) |
|   Anxiety disorders | | |
|     Panic | 214 (8.3) | 2,359 (91.7) |
|     Simple phobia | 103 (4.0) | 2,470 (96.0) |
|     Agoraphobia | 162 (6.3) | 2,411 (93.7) |
|     Generalized anxiety | 65 (2.5) | 2,508 (97.5) |
|     Obsessive-compulsive | 284 (11.0) | 2,289 (89.0) |
|     Social phobia | 26 (1.0) | 2,547 (99.0) |
|   Substance use disorders | | |
|     Alcohol abuse | 515 (20.0) | 2,058 (80.0) |
|     Alcohol dependence | 139 (5.4) | 2,434 (94.6) |
|     Nicotine abuse | 363 (14.1) | 2,210 (85.9) |
|     Nicotine dependence | 44 (1.7) | 2,529 (98.3) |
|     Cannabis abuse | 44 (1.7) | 2,529 (98.3) |
|     Cannabis dependence | 16 (0.6) | 2,557 (99.4) |
|     Amphetamine abuse | 40 (1.6) | 2,533 (98.4) |
|     Amphetamine dependence | 8 (0.3) | 2,565 (99.7) |
|     Khatom abuse | 90 (3.5) | 2,483 (96.5) |
|     Khatom dependence | 3 (0.1) | 2,570 (99.9) |
|     Betel abuse | 56 (2.2) | 2,517 (97.8) |
|     Betel dependence | 4 (0.2) | 2,569 (99.8) |

Dependence were 40 (1.6%) and 8 (.3%), Khatom Abuse and Dependence were 90 (3.5%) and 3 (.1%), Betel Abuse and Dependence were 56 (2.2%) and 4 (.2%) respectively.

**Discussion**

The prevalence of PTSD, Depression, and Co-morbid after the Tsunami was 33.6% 14.3% and 11.3% respectively. PTSD and Depression were the

most prevalent disorders after the disaster and showed a decrease over time.

A weighted combination of the thirteen independent variables correctly predicted 76.6% of traumatized individuals who developed PTSD. All predicted variables correlate with psychological factors especially "Direct Affected Area" and "Physical Injury". The variables that explain in part of severity of the traumatic event are considered some of the most salient predictors of PTSD[23]. In the part of physical injury variable, Davidson and Smith found that PTSD tended to be caused by physically injured and hospitalized after a traumatic event[24].

The variable "Having History of Previous Trauma before the age of twelve", was significant predictors of PTSD. Having reviewed the effects of childhood trauma as a risk factor for later developing PTSD, Breslau and Chilcoat indicated that those who reported any previous trauma were significantly more likely to experience PTSD than those with no previous exposure to trauma[25].

Regarding, PTSD and Coping, literature suggests that some methods of coping are more effective for some people or some situations, and the way people process and interpret traumatic events and its consequences may play a role in the development or maintenance of PTSD[26,27]. The result from binary logistic analysis of the present study shows that some methods of coping, Humor and Substance use, are resilient in PTSD because reciprocal inhibition theory confirms that "two antagonistic responses could not coexist in the same organism" and happiness and sadness could not coexist in patients at the same time. Some therapists use this theory to develop exposure counter-conditioning technique, which is one of the cognitive behavioral therapies. The technique has strong empirical support as the treatments of choice for PTSD[28,29]. Patients consume psychoactive substances to improve their mood or to escape from adverse emotions. The reinforcement received may lead to elevated substance use rates and subsequently the use-related negative consequences that characterize substance abuse. That is a reason many researches find that PTSD symptomatology is significantly associated with alcohol and other substance use. However, several negative outcomes should not be neglected. Many researchers found out that the group of PTSD patients with substance use resulted in more other psychiatric problems and total psychiatric symptoms prior to relapse than those without substance use. Thus, this suggests that both PTSD and substance use have a poorer clinical course[30].

PTSD and Personality, predisposing personal characteristics possibility that there may be particular risk factors that make an individual vulnerable towards developing a PTSD. The authors found that introvert and neurotic personality are associated with PTSD. This is in agreement with Aidman and Kollaras-Mitsinikos who found that intrusion symptoms were predicted both by Extraversion and Neuroticism but avoidance symptoms was predicted by Neuroticism only[31].

**Conclusion**

The authors finally established a huge clinical database of mental health problems among Tsunami survivors in Thailand, 2004. The authors found 1,054 subjects diagnosed with PTSD, 447 depression and 353 co-morbidity subjects. Among 1,054 subjects diagnosed with PTSD, 556 were diagnosed to chronic PTSD after six months. There were psychosocial factors identified as risk and protective factors for PTSD and depression. In comparison between the first phase and the second phase, the present study showed that the prevalence of PTSD was still higher in the affected region six months after the Tsunami. Therefore, the research team will concentrate on treatment for the patients of chronic PTSD and other mental disorders in the third phase that include analysis of blood samples data for genetic study in the future.

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## โรคเครียดรุนแรงหลังเผชิญเหตุการณ์สะเทือนขวัญ ของผู้รอดชีวิตจากคลื่นสึนามิในเขต 6 จังหวัด ภาคใต้ของประเทศไทย

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ภัยธรรมชาติที่รู้จักกันในชื่อ "สึนามิ" ได้เกิดขึ้นบริเวณชายฝั่งทะเลอันดามันของประเทศไทย ในเดือนธันวาคม พ.ศ. 2547 และทำให้เกิดคำถามว่า จะเป็นสาเหตุให้เกิด โรคเครียดรุนแรงหลังเผชิญเหตุการณ์สะเทือนขวัญ (Post-traumatic Stress Disorder: PTSD) ในประชาชนที่อาศัยบริเวณเกิดเหตุ และจะมีวิธีการใดที่จะเลี่ยงปัจจัยที่จะทำให้เกิด PTSD

วัตถุประสงค์ของการศึกษาครั้งนี้เพื่อแสดงให้เห็นถึงผลการวิเคราะห์ทางสถิติของปัจจัยทางจิตสังคมต่าง ๆ ที่สัมพันธ์กับ PTSD และความผิดปกติทางจิตอื่นๆ เพื่อพัฒนาฐานข้อมูล PTSD ต่อไป การสำรวจชุมชนในเชิงตัดขวาง ได้ดำเนินการ เป็น 2 ระยะ โดยติดตามจากกลุ่มตัวอย่างเดิม ในระยะแรกมุ่งเน้นที่การศึกษาความชุกของโรค PTSD และโรคซึมเศร้า รวมถึงปัจจัยที่เกี่ยวข้อง ผลการศึกษาในกลุ่มตัวอย่าง 3,133 ราย แสดงให้เห็นว่า มีผู้ป่วยเป็น PTSD ร้อยละ 33.6 เป็นโรคซึมเศร้า ร้อยละ 14.27 และมีอาการทั้งคู่ ร้อยละ 11.27 ในระยะที่ 2 มุ่งเน้นที่การเป็น PTSD เรื้อรัง และโรคทางจิตเวชอื่น ๆ จากจำนวนกลุ่มที่ได้เลือกไว้จากเดิมจำนวน 2,573 ราย ถูกสัมภาษณ์ และเจาะเลือด โดยพบว่ามีผู้ป่วยเป็น PTSD เรื้อรัง ร้อยละ 21.6

จากการวิเคราะห์ทางสถิติ สามารถช่วยบ่งชี้ปัจจัยเสี่ยงที่สามารถพัฒนาสู่การเกิด PTSD และยังสามารถ ทราบถึงปัจจัยปกป้องที่จะช่วยให้ใช้เป็นแนวทางการป้องกัน การเกิด PTSD ได้ต่อไป